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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/559,528	12/02/2005	Claudia Maria de Lacerda Baptista	Q81622	2715

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EXAMINER	
NGUYEN, HUY TRAM	
ART UNIT	PAPER NUMBER
1797	
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08/28/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/559,528	BAPTISTA ET AL.	
	Examiner	Art Unit	
	HUY-TRAM NGUYEN	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 June 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,8,20,22,27,28 and 31-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,8,20,22,27,28 and 31-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *02 December 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see the Remarks, filed on June 12, 2009, with respect to the rejection(s) of claim(s) 1-4, 8, 20, 22, 27, 28 and 31-34 under 103 (a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of **Harandi et al. (US Patent No. 5,154,818) in view of Engelhard Corporation "Increase Gasoline Octane and Light Olefin Yields with ZSM-5" Volume 5 Issue 5.**

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-4, 8, 20, 22, 27, and 31-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Harandi et al. (US Patent No. 5,154,818) in view of Engelhard Corporation "Increase Gasoline Octane and Light Olefin Yields with ZSM-5" Volume 5 Issue 5.**

Regarding Claim 1, Harandi et al. reference discloses a process for the fluid catalytic cracking of mixed feedstocks of hydrocarbons from different sources, in a riser reactor and in the presence of a zeolitic catalyst, under cracking conditions for producing light products, said mixed feedstocks comprising feeds A and B, with feed B being more refractory to cracking, wherein said process comprises simultaneous segregated injections of feeds A and B, in distinct riser locations **(Abstract – light hydrocarbon in the first reaction zone and heavy hydrocarbon feed in the second reaction zone and Column 9, Lines 1-48 – large pore Zeolite Y and medium pore ZSM-5 catalysts)**, and includes the steps of:

a) injecting feed A at a location at the bottom of the riser reactor, which sets the base of the riser reactive section **(Figure 2, numeral 10)**, with a temperature rise ranging from 10 to 50°C **(Column 14, Lines 39-42 – first reaction zone temperature**

is from about 700° to about 1000°F and the second reaction temperature is from 950° to about 1200°F); and

b) injecting feed B, downstream, at one or more riser locations between 10% and 80% of the riser reactive section **(Figure 2, numeral 14)**;

wherein the injection conditions in a high dispersion degree of feed B comprise: dispersion steam **(Column 7, Lines 39-50);**

a temperature equal to or higher than the injection temperature of feed A **(Column 5, lines 57-59 - between about 300° and 800°F and Column 7, Lines 61-63 – between about 500° and 800°F)**;

wherein the catalyst to oil ratio is maintained during the cracking of feeds A and B **(Column 12, Lines 31-34)**, and

the light products resulting from the cracking process are recovered in a higher amount than would be obtained if feed B was injected in the base of the riser reactive section **(Abstract).**

However, Harandi et al. reference does not specify that the process is used to produce LPG with the feed B at an amount of from 5 to 50 wt% based on the total mixed feedstock being injected downstream after maximum LPG production from feed A and the feed B having dispersion steam ranging from 5 to 20%. It would have been obvious to one having ordinary skill in the art at the time the invention was made to operate the process of Harandi et al. to produce LPG, since Article from Engelhard Corporation states at **Page 1, Lines 13-14 and Lines 29-30** that increasing C3 and C4 LPG selectivity co-currently with the decrease in gasoline selectivity and depends on feed

characteristics and operating conditions and the type of catalysts used. Also, Harandi et al. discloses that at a constant conversion, the present processes permit relatively low second reaction zone temperatures, which is turn significantly reduce olefins production and increase gasoline octane; thus, the production of olefins would be increased and gasoline octane would be decreased when the temperature rises from the first reaction zone to the second reaction zone.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to operate the process of Harandi et al. using the claimed amount of feed B and the percentage of dispersion steam, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Regarding Claim 2, Harandi et al. reference discloses the process according to claim 1, wherein feed A is a heavy distillation gasoil (HVGO) **(Column 5, Lines 4-8 – gas oil)**.

Regarding Claims 3 and 4, Harandi et al. reference discloses the process according to claim 1, wherein feed B is produced by a thermal or by a physical separation process or a pyrolysis, delayed coking and shale oil retorting process **(Column 7, Lines 3-20).**

Regarding Claim 8, Harandi et al. reference discloses the process according to claim 1, wherein the injection riser location of feed B is between 25% and 50% of the riser reactive section **(Figure 2)**.

Regarding Claim 20, Harandi et al. reference discloses the process according to claim 1, wherein the temperature rise in the mixing region between feed A and the regenerated catalyst is of from 10°C to 50°C, provided by the injection of feed B in a riser location downstream of the injection location of feed A, and is in the range of from 520°C to 650°C (**Column 14, Lines 39-42 – first reaction zone temperature is from about 700° to about 1000°F and the second reaction temperature is from 950° to about 1200°F and Column 7, Lines 58-66 - temperature of the regenerated catalyst stream is preferably at least about 1100°F).**

Regarding Claim 22, Harandi et al. reference discloses the process according to claim 1, wherein the riser outlet reaction temperature is in the range of from 520°C to 590°C **(Column 14, Lines 39-42 –the second reaction temperature is from 950° to about 1200°F; thus, the riser outlet reaction temperature would be in the same temperature range).**

Regarding Claim 27, Harandi et al. reference discloses the process according to claim 1, wherein the flow of the reactive catalyst to oil mixture is upwards **(inherency - the spent catalyst being carried upward toward the riser outlet).**

Regarding Claim 31, Harandi et al. reference discloses the process according to claim 1, wherein the catalyst comprises a Y zeolite **(Column 9, Lines 7-22).**

Regarding Claim 32, Harandi et al. reference discloses the process according to claim 1, wherein the catalyst comprises a ZSM-5 zeolite **(Column 9, Lines 23-24).**

Regarding Claim 33, Harandi et al. reference discloses the process according to claim 1, wherein the catalyst comprises a combination of Y and ZSM-5 zeolites in any

amount **(Column 8, Line 55-Column 9, Line 48 – mixed catalyst system comprising first and second catalyst types).**

Regarding Claim 34, Harandi et al. reference discloses the process according to claims 31, 32 or 33, wherein the zeolite catalysts comprise zeolites as additives **(inherency - light hydrocarbon and spent catalyst in the first reaction zone and heavy hydrocarbon and regenerated catalyst in the second reaction zone).**

Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Harandi et al. (US Patent No. 5,154,818) in view of Engelhard Corporation "Increase Gasoline Octane and Light Olefin Yields with ZSM-5" Volume 5 Issue 5 and Gauthier et al. (US Patent 6,296,812 B1)**

Regarding Claim 28, Harandi et al. reference discloses the process according to claim 1 except for the flow of the reactive catalyst to oil mixture is downwards. Gauthier et al. reference discloses a dropper reactor for fluidized bed catalytic cracking hydrocarbons **(Figures 5 & 6)**. It would have been obvious to one having ordinary skill in the art at the time invention was made to use a dropper reactor (downward flows of catalyst and oil mixture) of Gauthier et al. in place of the riser of Harandi et al., since Gauthier et al. states at Abstract that the fluidized bed catalytic cracking reaction of hydrocarbons would be the same in a riser and/or dropper.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HUY-TRAM NGUYEN whose telephone number is

(571)270-3167. The examiner can normally be reached on MON- THURS: 6:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter Griffin can be reached on 571-272-1447. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HTN
8/26/09

/Walter D. Griffin/
Supervisory Patent Examiner, Art Unit 1797